Space Weather Forecast

Issued on Tuesday, 20 June 2023 at 01:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor/Moderate R1/R2 radio blackouts throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the past 24 hours, with two Moderate flares, both of which originated from a region close to the southeast limb. There are currently eleven sunspot regions on the visible disc, with the aforementioned active region continuing to rotate onto the disc. Several of the regions are large and relatively complex, these are in the southern central or southwestern disc. One smaller region in the southwest quadrant has developed significantly during the period. All other regions remain small and magnetically simple, with little change during the period. A slight dimming was observed in available imagery around 19/0200 UTC, this is not thought to have produced an Earth directed Coronal Mass Ejection (CME).

Solar Wind / Geomagnetic Activity: The solar wind initially fluctuated between slow-ambient and slightly elevated levels, with speeds of 375-420 km/s. Around 19/1600 UTC winds saw a sudden, albeit slight, increase to around 450 km/s and since 19/2230 UTC has been approaching elevated levels. The total magnetic field was weak throughout, with the important north-south component also fluctuating weakly. The net result of the above solar wind measures was Quiet to Unsettled geomagnetic activity (Kp 1-3).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain Low to Moderate with a chance of further isolated Moderate flares and a slight chance of a Strong flare.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast. Earth is now under the waning influence of a coronal hole fast speed stream, with winds soon returning to slow levels. Slight enhancements to the solar wind speed are possible towards midweek, under the influence of further coronal hole high speed streams. All things considered, geomagnetic activity is expected to be mostly Quiet with a chance of Unsettled to Active intervals on days 3 and 4 (21-22 June).

Energetic Particles / Solar Radiation: No solar radiation storms are expected, though a very Slight Chance of enhancement throughout given the current configuration of front-sided sunspot groups.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	15	10	15
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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